

DETAILED ACTION

Claim Rejections - 35 USC § 112

Claims 49-59 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 49 is vague and indefinite. It is unclear whether applicant is claiming the friction ring subcombination or a combination of the friction ring and the textile machine. Note that the preamble of the claim implies the subcombination while the body of the claim implies the combination.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 49-52, 56, 57 and 67-69 are rejected under 35 U.S.C. 103(a) as being unpatentable over Miyajima (US 5,276,460) in view of Cooper (U.S. Patent No. 1,140,254).

Miyajima disclose a friction ring for friction driving a roll; a friction roll 32 defining axial and radial directions, the friction roll comprising at least one rotatable roll body 32 for driving the spool, the at least one rotatable roll body 32 having a body width along the axial direction and having at least two portions, one portion 32 with a radius of r_1 (D2) and another portion 32 with a radius of r_2 (D3), wherein the radius r_1 (D2) is less than the radius r_2 (D3) (see Fig. 3), the friction ring comprising:

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Miyajima fails to show a belt having a belt width that is less than the body width of the at least one rotatable body; the belt being positioned upon the portion of the rotatable roll body having a radius of r_l ; the belt 3 removable by having two open ends bound together by a fastening apparatus. However, Cooper teaches a flexible ring 4 with ring fastening means in general having two open ends bound together by a fastening apparatus. The recitation with respect to the manner in which a claimed apparatus is intended to be employed does not differentiate the claimed apparatus from prior art apparatus satisfying the claimed structural limitations. Ex parte Masham, 2 USPQ 2d 1647 (1987).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the friction belt of Miyajima to include a fastening means general having two open ends bound together by a fastening apparatus as taught by Cooper, to more easily replace the friction ring of Miyajima.

In regard to claims 50 and 51, Miyajima as modified by Cooper teaches the fastening apparatus comprises two connectors, whereby one of the connectors is secured to each of the connectors is secured to each of the open ends of the friction ring, where the connectors include hooks that connect by radial movement relative to each of the ends.

In regard to claim 56, Miyajima as modified by Cooper teaches the friction ring is constructed with a curvature that conforms to the curvature of the at least one rotatable roll body. In regards to claims 57, Miyajima as modified by Cooper teaches the ends of the friction ring are joined by an adhesive. It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the fastening ends of Miyajima as modified by Cooper to

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include an adhesive joining the interlocking elements as suggested by Cooper, to secure the engagement of the interlocking elements.

In regard to claims 67 and 68, Miyajima as modified by Cooper teaches an apparatus for friction driving a spool on a textile machine, the apparatus comprising: a friction roll 32 having at least one rotatable roll body 32 disposed thereon, the rotatable roll body having a portion 32 with a radius of r_1 (D2) that is axially adjacent to a portion with radius r_2 , wherein radius r_1 is less than radius r_2 ; a friction ring carried on the portion of the rotatable roll body having a radius of r_1 , the friction ring positioned axially adjacent to the portion portion 32 with a radius of r_2 (g3), the friction ring configured as a flexible belt 32 with two ends 24, 26 (Cooper); and a fastening device 24, 26 (Cooper) that binds together the two ends of the friction ring.

In regard to claim 68, Miyajima as modified by Cooper teaches the fastening device (Cooper) creates a joint that extends along the axial direction of the rotatable body and across the entire width of the flexible belt when the fastening device (Cooper) binds the two ends of the belt together.

Claims 53-55 and 58 rejected under 35 U.S.C. 103(a) as being unpatentable over Miyajima in view of Cooper as applied to claim 49 above, and further in view of Burke et al. (US 5,507,226).

Burke teaches a friction roll having a friction ring 14 constructed from elastic material (col. 3 ll.64 to col. 4 ll.62, Burke) and an auxiliary fastener (col. 4 ll.49-61). It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the belt of Miyajima in view of Cooper to include an elastic material as suggested by Burke to

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increase the coefficient of friction, since combining prior art elements according to known methods will yield predictable results.

Claim 59 is rejected under 35 U.S.C. 103(a) as being unpatentable over Miyajima as modified by Cooper as applied to claim 49 above, and further in view of Smith (US 1,554,253). Smith teaches a friction belt having plurality of grooves 33 oriented perpendicular to the length of the belt. It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the belt of Miyajima to include grooves oriented perpendicular to the length of the belt as suggested by Smith to better grip the material, since all of the claimed elements were known in the prior art and one skilled in the art could have combined the elements as claimed by known methods with no change in their respective functions, and the combination would have yielded predictable results to one of ordinary skill in the art at the time of the invention.

Claims 60, 63 and 66 are rejected under 35 U.S.C. 103(a) as being unpatentable over Burke et al (US 5,507,226) in view of Cooper (U.S. Patent No. 1,140,254).

Burke discloses an apparatus for friction driving a spool, the apparatus comprising a friction roll having at least one rotatable roll body 12 disposed thereon; and a friction ring 14 carried on the rotatable roll body, the friction ring comprising a belt that is removable and constructed from an elastic strip of flexible material(col. 3 ll. 64 to col. 4 ll.62, Burke).

Burke fails to show the friction ring 14 removable by having two open ends bound together by a fastening apparatus.

Cooper teaches a ring with ring fastening means in general having two open ends bound together by a fastening apparatus, the two ends connected or separated from each other by

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displacement of the one end relative to the other along a radial direction of the roll body. The recitation with respect to the manner in which a claimed apparatus is intended to be employed does not differentiate the claimed apparatus from prior art apparatus satisfying the claimed structural limitations. *Ex parte masham*, 2 USPQ 2d 1647 (1987).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the friction ring of Burke to include a fastening means general having two open ends bound together by a fastening apparatus as suggested by Cooper, to more easily remove the friction ring of Burke.

In regard to claim 63, the limitation that the cross-section is about constant when subject to a tensile force equal to that of installation on the roll body and where the ring exhibits a width that diminishes with increasing distance from the ends of the friction ring when no tensile force is acting on the friction ring are properties that are inherent to an elastic material that is ring shaped and subject to a tensile force.

In regard to claim 66, Burke as modified by Cooper teaches the fastening apparatus comprises two connectors, whereby one of the connectors is secured to each of the connectors is secured to each of the open ends of the friction ring, where the connectors include hooks that connect by radial movement relative to each of the ends.

Claims 61 and 65 are rejected under 35 U.S.C. 103(a) as being unpatentable over Burke in view of Cooper as applied to claim 60 above, and further in view of Smith.

Smith teaches the axial position of the at least one belt along the rotatable roll body is maintained by differences in the radius of the rotatable roll body and a plurality of grooves 33 oriented perpendicular to the length of the belt.

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It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the roll body of Burke in view of Cooper to include different radii to hold the belt in its axial position and to have a plurality of grooves for gripping as suggested by Smith, since all of the claimed elements were known in the prior art and one skilled in the art could have combined the elements as claimed by known methods with no change in their respective functions, and the combination would have yielded predictable results to one of ordinary skill in the art at the time of the invention.

Allowable Subject Matter

Claims 38-40 are allowed.

Claims 62 and 64 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to William A. Rivera whose telephone number is 571-272-6953.

The examiner can normally be reached on Monday to Friday - 10:00 AM to 6:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael R. Mansen can be reached on 571-272-6608. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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/William A Rivera/
Primary Examiner, Art Unit 3654

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